What is claimed is;

1. A prospective abnormal shadow detecting system comprising a threshold value control means which stepwise sets a plurality of threshold values for binary-coding radiation

5 image data of an object,

a binary image generating means which carries out binary-coding processing on the radiation image data by the use of each of the threshold values set by the threshold value control means, thereby generating a plurality of binary

10 images,

a primary-label region extracting means which attaches a primary label to an isolated region in each of the binary images and extracts the isolated regions attached with the primary label as primary-label regions,

15 a growth score calculating means which calculates for each primary-label region a growth score for evaluating the likelihood that the primary-label region represents a growth, and

a prospective abnormal shadow region detecting means

20 which compares the growth scores for the respective primary-label regions with each other and detects as the prospective abnormal shadow region a predetermined number of primary-label regions which are higher in the growth score than any of the others.

25 2. A prospective abnormal shadow detecting system as defined in Claim 1 further comprising a secondary-label region

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determining means which determines whether a primary-label region extracted from one of the binary images is the same as that extracted from any other binary images, extracts as a secondary-label region only one of the same primary-label regions when it is determined that the primary-label regions extracted from the respective binary images are the same, and determines a growth score for the secondary-label region on the basis of the growth scores for the same primary-label regions wherein the prospective abnormal shadow region detecting means compares the growth scores for the respective secondary-label regions with each other and detects as the prospective abnormal shadow region a predetermined number of secondary-label regions which are higher in the growth score than any of the others.

3. A prospective abnormal shadow detecting system as defined in Claim 2 in which the threshold value control means stepwise sets a plurality of threshold values in the range covering all the pixel values which theoretically the pixel can take.

4. A prospective abnormal shadow detecting system as defined in Claim 3 in which one step at which the threshold value control means stepwise sets a plurality of threshold values is fixed to a predetermined pixel value.

5. A prospective abnormal shadow detecting system as defined in Claim 4 in which said predetermined pixel value is equal to the minimum unit of the pixel value.

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6. A prospective abnormal shadow detecting system as defined in Claim 2 in which the threshold value control means stepwise sets a plurality of threshold values in the range between a minimum pixel value which is minimum in the values

5   of the pixels actually existing in the region of the object and a maximum pixel value which is maximum in the values of the pixels actually existing in the region of the object.

7. A prospective abnormal shadow detecting system as defined in Claim 6 in which one step at which the threshold

10   value control means stepwise sets a plurality of threshold values is fixed to a predetermined pixel value.

8. A prospective abnormal shadow detecting system as defined in Claim 7 in which said predetermined pixel value is equal to the minimum unit of the pixel value.

15   9. A prospective abnormal shadow detecting system as defined in Claim 2 in which one step at which the threshold value control means stepwise sets a plurality of threshold values is changed according to the pixel value range.

10. A prospective abnormal shadow detecting system as

20   defined in Claim 9 in which the one step is changed according to the class into which the pixel is classified in a histogram which shows the pixel value distribution in the radiation image data.

11. A prospective abnormal shadow detecting system as

25   defined in Claim 2 in which the growth score is calculated on the basis of at least one of the brightness, the circularity,

and the size of the primary-label region.

12. A prospective abnormal shadow detecting system as defined in Claim 1 in which the threshold value control means stepwise sets a plurality of threshold values in the range covering all the pixel values which theoretically the pixel can take.

13. A prospective abnormal shadow detecting system as defined in Claim 12 in which one step at which the threshold value control means stepwise sets a plurality of threshold values is fixed to a predetermined pixel value.

14. A prospective abnormal shadow detecting system as defined in Claim 13 in which said predetermined pixel value is equal to the minimum unit of the pixel value.

15. A prospective abnormal shadow detecting system as defined in Claim 1 in which the threshold value control means stepwise sets a plurality of threshold values in the range between a minimum pixel value which is minimum in the values of the pixels actually existing in the region of the object and a maximum pixel value which is maximum in the values of the pixels actually existing in the region of the object.

16. A prospective abnormal shadow detecting system as defined in Claim 15 in which one step at which the threshold value control means stepwise sets a plurality of threshold values is fixed to a predetermined pixel value.

17. A prospective abnormal shadow detecting system as defined in Claim 16 in which said predetermined pixel value

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is equal to the minimum unit of the pixel value.

18. A prospective abnormal shadow detecting system as defined in Claim 1 in which one step at which the threshold value control means stepwise sets a plurality of threshold values is changed according to the pixel value range.

19. A prospective abnormal shadow detecting system as defined in Claim 18 in which the one step is changed according to the class into which the pixel is classified in a histogram which shows the pixel value distribution in the radiation image data.

20. A prospective abnormal shadow detecting system as defined in Claim 1 in which the growth score is calculated on the basis of at least one of the brightness, the circularity, and the size of the primary-label region.